

Annex G.13

Heritage and
Archaeological Specialist
Report

McGregor Museum Department of Archaeology



Archaeological and Cultural Heritage Investigation for the Environmental and Social Impact Assessment (ESIA) for the Gamsberg Zinc Mine and Associated Infrastructure in Northern Cape, South Africa

David Morris, McGregor Museum
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DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

Specialist:	Dr David Morris: McGregor Museum Archaeology Department		
Contact person:	Dr David Morris		
Postal address:	P.O. Box 316, Kimberley		
Postal code:	8300	Cell:	082 2224777
Telephone:	053-8392706	Fax:	053-8421433
E-mail:	mmkarchaeology@yahoo.co.uk		
Professional affiliation(s) (if any)	Association of Southern African Professional Archaeologists		

The specialist appointed in terms of the Regulations_

I, David Morris, declare that --

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist:

Name of company: Archaeology Department, McGregor Museum, Kimberley

Date: 17 April 2013

CULTURAL HERITAGE INVESTIGATION FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE GAMSBERG ZINC MINE AND ASSOCIATED INFRASTRUCTURE IN NORTHERN CAPE, SOUTH AFRICA

INTRODUCTION

This study presents an archaeological and historical baseline description of the pre-mining environment at Gamsberg preparatory to proposed zinc mining at the inselberg. It draws on the findings of previous surveys (Morris 2000a, 2001, 2010).

Desktop background research was followed by detailed field observations over a number of years. A Gap Analysis was performed in relation to the most recent mining initiative and further fieldwork was carried out to address areas not previously covered. The findings were evaluated qualitatively and significance of sites was measured against criteria used in the management of archaeological resources in South Africa.

An earlier report (Morris, 2000a) assessed likely impacts of every phase of the operation and made recommendations for Phase 2 salvage of archaeological materials. Permits were obtained for the latter tasks, but the proposed mining was then shelved. The permits are no longer valid.

Renewed interest in mining results in an opportunity to review earlier findings and incorporate additional observations for expanded areas of anticipated and possible mining impacts.

AUTHOR

The author of this report is a qualified archaeologist (PhD) accredited as a Principal Investigator by the Association of Southern African Professional Archaeologists. The author has worked as a museum archaeologist in the Northern Cape since 1985 and has, from the late 1990s, carried out surveys in the general area of Pofadder-Aggeney's. The author has a comprehensive knowledge of Northern Cape history and built environment, and has UCT-accredited training (workshop) on Architectural and Urban Conservation: researching and assessing local (built) environments (S. Townsend, UCT). He is also Chairman of the Historical Society of Kimberley and the Northern Cape.

The author works independently of the organization commissioning this specialist input, and provides this report within the framework of the National Heritage Resources Act (No 25 of 1999).

The National Heritage Resources Act no. 25 of 1999 (NHRA) protects heritage resources which include archaeological and paleontological objects/sites older than 100 years, graves older than 60 years, structures older than 60 years, as well as intangible values attached to places. The Act requires that anyone intending to disturb, destroy or damage such sites, objects and/or structures may not do so without a permit from the relevant heritage resources authority. This means that a Heritage Impact Assessment should be performed, resulting in a specialist report as required by the relevant heritage resources authority/ies to assess whether authorisation may be granted for the disturbance or alteration, or destruction of heritage resources.

Initially a desktop study was carried out followed by fieldwork undertaken at various times between 1999 and 2013. With renewed interest in mining at Gamsberg, a Gap Analysis (3.1) was undertaken to establish which areas required to be examined in more detail in relation to anticipated mining. Supplementary fieldwork was then planned and carried out in light of the Gap Analysis and the review of earlier work.

During field work some of the previously surveyed areas were revisited, but with the main focus being on the investigation of previously unexamined terrain. Maps and Google Earth were used for anticipating areas of potentially higher archaeological sensitivity, but the principal modus operandi in the field was a foot survey. The survey focussed on the different kinds of topography, such as small sheltered places in valley areas and Kloofs and the flat relatively less rocky plateau spaces, which might have been most attractive for past human activity or habitation and/or most conducive to the preservation of archaeological traces.

3.1

GAP ANALYSIS

In summary, previous work established that regionally important archaeological occurrences existed in the Study Area. One of these is on the northern rim of the inselberg with others in the basin. No traces from the colonial frontier era were found in areas expected to be impacted. Twentieth century remains of prospecting and mining activity include a campsite and tins dating from the 1970s.

Previous work had examined the wider spatial context in order to evaluate observations made on and immediately adjacent to the Gamsberg inselberg. The study additionally assessed the evidence of place names and historical accounts as documentation of the more recent protocolonial and colonial history which, it had been noted, included episodes of considerable conflict locally, associated with what historians now characterise as the genocide against the San.

Recommendations were made for mitigation, namely phase 2 archaeological salvage at selected sites.

The Gap Analysis indicated the need for detailed survey to be extended particularly to areas not covered previously but now included in the area of proposed operations.

The survey had been compliant with relevant heritage legislation. The report had been reviewed by the SA Heritage Resources Agency (SAHRA), which had issued permits for Phase 2 salvage in light of the recommendations made (this work not having been done due to the temporary shelving of the project). The permits for excavation/surface collecting were valid for one year only – hence in the event of future mitigation work as recommended new permits would need to be sought.

Previous findings and conclusions were to be reviewed in light of fresh observations in areas not previously covered; and recommendations revised for salvage if necessary.

The IFC, Performance Standards on Social and Environmental Sustainability (2006) were considered with respect to cultural heritage (it was suggested that South African heritage legislation and requirements were consistent with international standards) and with respect to indigenous people (it was suggested that there may be partial applicability in the longer term – but that “indigenous people” as defined in the performance standards were not directly involved in the area at present).

3.2 *ASSUMPTIONS AND LIMITATIONS*

It was assumed that, by and large in this landscape, with its sparse vegetation and often shallow soil profiles, some sense of the archaeological traces to be found in the area would be readily apparent from surface observations (including assessment of places of erosion or past excavations that expose erstwhile below-surface features).

Over most of the terrain expected to be impacted by mining, erosion has been the predominant recent geological process, essentially leaving any archaeological traces at the surface and in poorly preserved contexts (in settings where deposits are sedimented, by contrast, archaeological material would tend to accumulate over time in separate strata, with greater chances for better preservation).

A proviso is routinely given, that should sites or features of significance be encountered during any phase in the life of the mine (such sites or features

could include an unmarked burial, an ostrich eggshell water flask cache, or a high density of stone tools, for instance), specified steps are necessary (cease work, report to heritage authority).

DESCRIPTION AND EVALUATION OF ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

Heritage resources including archaeological sites are in each instance unique and non-renewable resources. Area and linear developments such as those envisaged in terms of mining and its associated infrastructure can have a permanent destructive impact on these resources. The objective of an ESIA would be to assess the sensitivity of such resources where present, to evaluate the significance of potential impacts on those resources and, if and where appropriate, to recommend no-go areas and measures to mitigate or manage said impacts.

4.1

DIRECT, INDIRECT AND CUMULATIVE IMPACTS

The destructive impacts that are possible in terms of heritage resources would tend to be direct, once-off events occurring during construction and mining. In the long term, the proximity of operations in a given area could result in secondary indirect impacts resulting from the movement of people or vehicles in the immediate or surrounding vicinity. An Environmental Management Plan should seek to minimize the latter impacts as far as possible.

Observations are summarised in terms of an initial desktop survey and field inspection, in each case with detailed characterisation and discussion given separately in Appendices to this report.

5.1 DESKTOP ASPECT: ARCHAEOLOGICAL AND HISTORICAL BACKGROUND TO THE INVESTIGATION

An initial survey of the literature on the Pofadder-Aggeney's area showed that minimal work had been undertaken in the region prior to the project (Beaumont *et al* 1995), although in the 1990s, a few specialist inspections were carried out for Eskom and Black Mountain mine. While by no means in-depth, these latter surveys together with the work of Morris & Beaumont (1991), Beaumont *et al* (1995) and Smith (1995), provided some regional context to the study and an indication of what to expect from an archaeological perspective at the Study Area. Aspects of the resulting work at Study Area itself supplemented existing data in significant ways providing new insights into the archaeological and cultural heritage of the region.

5.1.1 *Place names and their relevance*

Place names – of towns, farms and topographic features – provide insight into the history of the area, some of them shedding particular light on the histories of the indigenous people of the region. Detail on place names and discussion is presented in Appendix 1.

5.1.2 *Stone Age sites and rock art*

Cultural Resources Management reports from the surrounding region refer to Later and Middle Stone Age sites occurring. An impression gained from these studies was that archaeological sites in the area are markedly more dispersed than in areas in the Karoo and eastern Bushmanland, to the south east, and along the Orange River. A rock painting site is described from Black Mountain Mine, nearby, while reference is made to a rock engraving seen in this landscape in the 1870s which has yet to be relocated. Detail on these prior archaeological observations is presented in Appendix 1.

5.1.3 *Predictions*

Desktop survey results provide indications as to what might be expected on the ground in the Study Area. Principally, there was an expectation of sparse

Stone Age traces which could be expected to cluster around particular kinds of features in the landscape such as waterholes and springs, and in the shelter of hills, while widely dispersed isolated artefacts might occur. Colonial traces were likely to be equally sparse and ephemeral: it was known that farmers practiced transhumance (seasonal movement) between here and Namaqualand into the first third of the twentieth century, so that remains left behind up to that time were likely to be mainly impermanent.

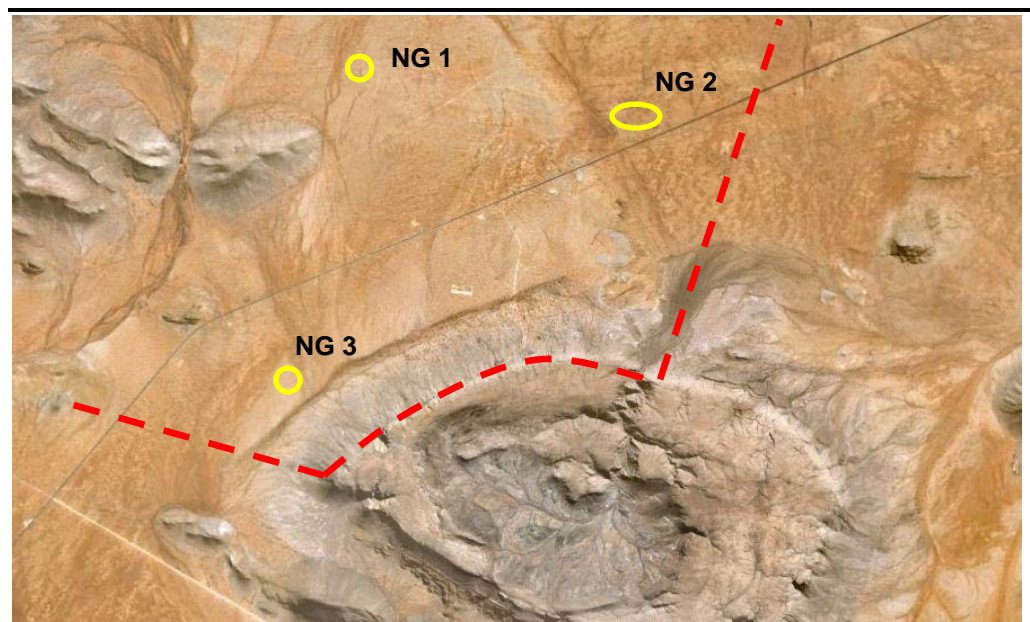
5.2 FIELD OBSERVATIONS IN THE STUDY AREA

Between 1999 and 2012 a number of field surveys were undertaken at Gamsberg. For purposes of this report the Study Area is divided into three zones for the tabulation of results: North of Gamsberg (5.2.1); South of Gamsberg (5.2.2), and Inselberg and Basin (5.2.3).

5.2.1 North of Gamsberg

Figure 5.2.1 Archaeological Observations: North of Gamsberg

The red dashed line indicates the northern slope of Gamsberg and the adjacent plain extending northwards across the N14 road. Yellow circles and ellipses represent heritage sites or features. Site numbers are explained in Table 5.2.1



Survey of land surfaces north of Gamsberg and on the northern slope of the inselberg itself on the farms Gams and Aroam revealed extremely minimal

archaeological traces, namely a very few isolated stone flakes. Where erosion had cut into the surface there was no indication of any artefacts below the surface there either.

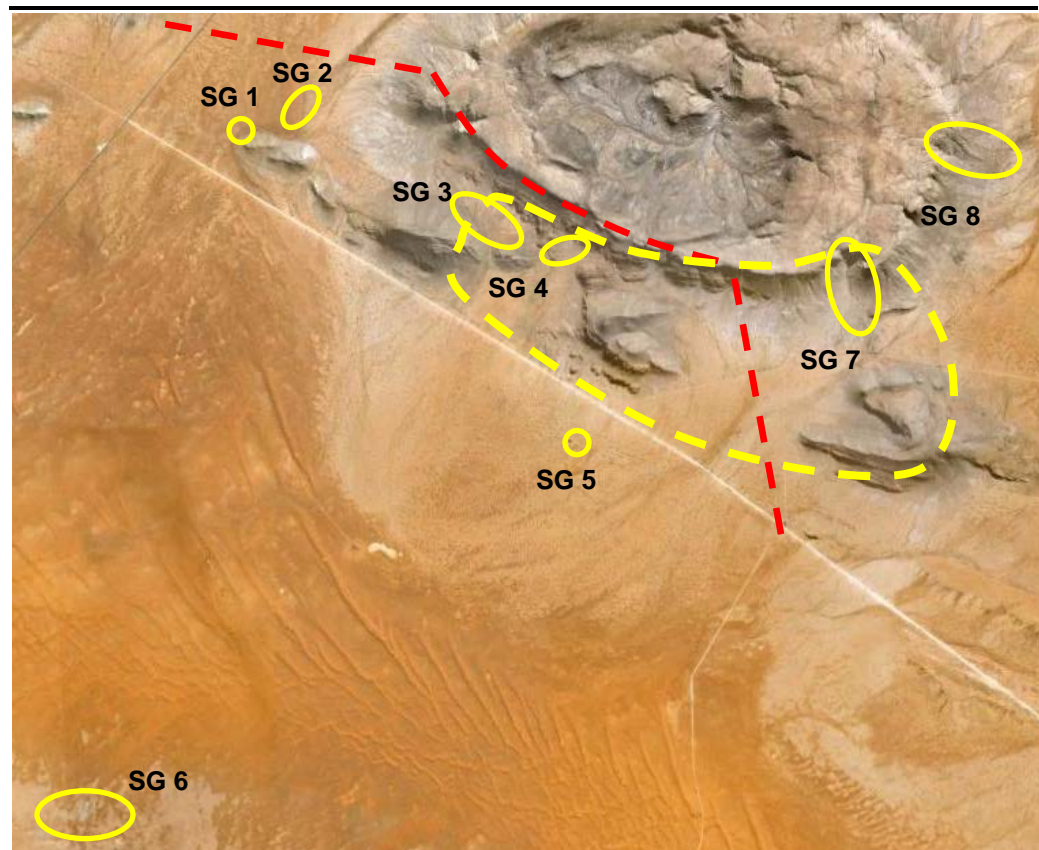
Table 5.2.1. Archaeological Observations: North of Gamsberg

Locality	Description	Heritage Significance
NG 1 29.18247 S 18.94130 E	Apparent stone structure: mid-twentieth century drilling site (water or mine prospecting). Cement capping has code '2293 /54'. Bottle glass and wire found in the vicinity. A similar feature occurs further north at 29.18235 S 18.94446 E (P Desmet pers comm). Ostrich eggshell fragments on nearby rise are possibly indicative of Later Stone Age activity, but no stone artefacts found.	Low
NG2 29.19924 S 18.98100 E	A series of dome-shaped bedrock outcrops around which are clustered an abundance of Ceramic Later Stone Age artefacts (stone artefacts, pottery, ostrich eggshell). Elongated grinding grooves were noted on the outcropping bedrock. These features occur on other similar sites in the wider landscape. Hollows in the bedrock occur, which hold water for a time after rains (known locally as !Gorras the Nama word for these natural reservoirs). The sites probably represent repeated short-duration encampments by transhumant herders or hunter-gatherers with pottery, probably mainly in the last millennium. Transhumant farmers of the colonial era evidently used such sites in similar manner (leaving broken glass and porcelain).	High
NG3 29.236 S 18.932 E	Isolated Earlier Stone Age (ESA) cleaver found on the plain below the inselberg, noted by P. Desmet. Such isolated finds indicate off-site activity. Small clusters of ESA artefacts have been found in the basin. This single instance lacks context and is hence of limited archaeological significance.	Low

5.2.2 South of Gamsberg

Figure 5.2.2 Archaeological Observations: South of Gamsberg

The dashed red line indicates the south western and southern slopes of Gamsberg and the adjacent valleys and plains extending southwards to and beyond the Loop 10 road. Yellow circles and ellipses represent heritage sites. The dashed yellow line represents a sensitive portion of the landscape implicated in documentary and oral evidence of genocide against the San. Site numbers are explained in Table 5.2.2



Compared with the northern side of Gamsberg, the survey reveals that the south western and southern side is richer in sites and is consequently more sensitive. Higher sensitivity stems further from evidence that the southern/south eastern side of Gamsberg was the site (indicated by a yellow dashed line) of an incident in which a group of San were cornered and shot – part of what historians now characterise as a genocide against the indigenous people of the region. Some evidence suggests that this most likely took place in the kloof indicated as SG 7, known as ‘Inkruip’ (‘Creep in’).

The occurrence of sites is focused on features such as watercourses and waterholes that would be activated by rain, and sheltered places. Colonial era stone-walling, as dwelling space and kraals, is evident at sites SG 5 and SG 8.

The sites identified in Figure 5.2.2 are described and evaluated in archaeological terms in Table 5.2.2.

Table 5.2.2. Archaeological Observations: South of Gamsberg

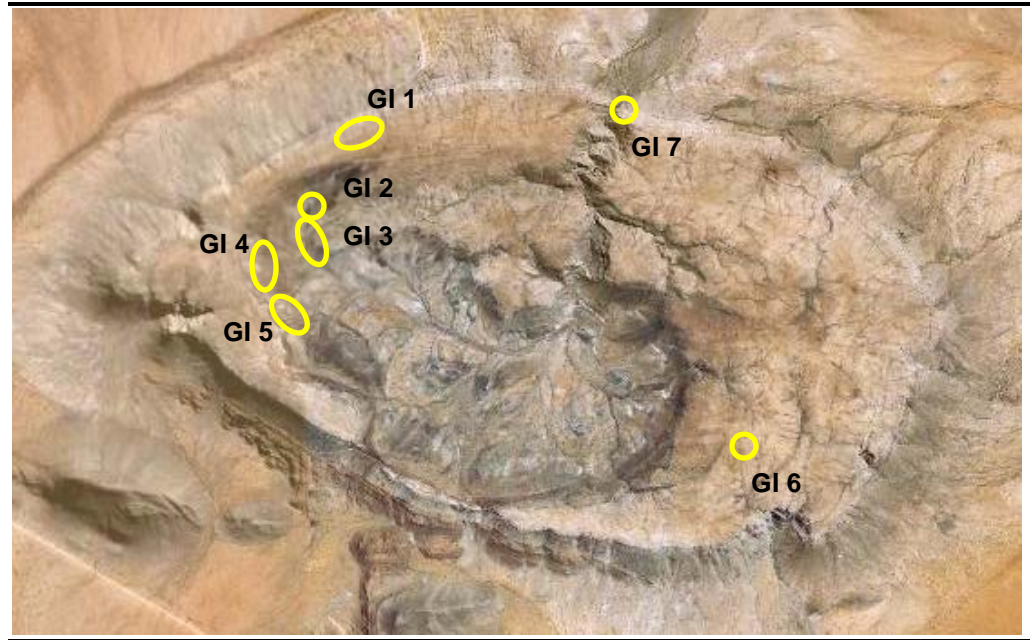
Locality	Description	Heritage Significance
SG 1 29.24859 S 18.90780 E	A possible grave site on the lower slope of a dune flanking a dry watercourse south west of the Gamsberg, consisting of two small mounds of stone (diameter 0.5 m), two disturbed mounds of stone and a patch of somewhat less concentrated stones. It could not be stated with certainty that these were graves but if they are they do not reflect colonial/missionary-influenced rectangular grave form. Broken bottle glass was the only artefactual material in the vicinity, not necessarily associated.	High subject to verification that they are graves.
SG2 29.24849 S 18.91609 E	A surface scatter of Ceramic Later Stone Age material on a flat sandy area upslope from a dry watercourse. Artefacts include fragments of ostrich eggshell, pottery (including decorated sherds and a lug fragment), stone tools made on quartz and river-rounded pebbles. In addition there is bottle glass and porcelain. Bone is preserved in places. The assemblage is consistent with late herder sites in the region, with an over-printing of proto-colonial traces. There is a stone cairn similar to that noted at the alleged grave site SG 1 mentioned above. The site reflects sub-recent Later Stone Age activity in the area. It appears that people of this period were exploiting resources mainly on the outer edges of the inselberg and to a lesser extent on the mountain or within the basin.	High

Locality	Description	Heritage Significance
SG3 In vicinity of 29.26006 S 18.94331 E	A diffuse low density spread of archaeological traces of different ages including Later Stone Age pieces of ostrich eggshell, clay pot sherds, a lower grindstone (29.25710 S 18.94368 E); a colonial frontier era 'tierhok' (trap made of stone for capturing predators) (29.25734 S 18.94684 E); and twentieth century traces relating to prospecting (29.26144 S 18.94392 E)	Medium
SG4 29.26318 S 18.95436 E	A rich surface spread of Later Stone Age artefacts including stone tools, clay pottery and ostrich eggshell fragments on a sandy bank in a sheltered valley adjacent to a watercourse descending from the mountain.	High
SG5 29.28555 S 18.95608 E	A small hill south of the Loop 10 road on the farm Bloem Hoek, with colonial era stone walling and a possible grave on the south west side. Later Stone Age artefacts occur in the shelter of a large boulder, with a grinding groove in bedrock nearby.	High
SG6 29.33326 S 18.87970 E 29.32940 S 18.88654 E 29.33251 S 18.90108 E	Well clear of the mining area but instructive in terms of the regional archaeological context, three adjacent bedrock exposures on the farms Aggeneyns and Bloem Hoek with !Gorras (hollows where water collects during rains). In each case, variable quantities of Later Stone Age artefacts	High
SG7 29.26467 S 18.99574 E	A kloof known to at least one local farmer as 'Inkruip' (Creep in) because according to legend this was where the last San of the area were cornered and shot. No archaeological traces were found in the kloof, however.	High
SG8 29.25135 S 19.01461 E 29.25209 S 19.01595 E	Colonial era rectangular stone walling (two kraals) on the east side of the inselberg, downslop from a spring, representing farming history in the area.	High

5.2.3 Gamsberg Inselberg and Basin

Figure 5.2.3 Archaeological Observations: Gamsberg Inselberg and Basin

Yellow circles and ellipses represent heritage sites on the inselberg and in the basin of the mountain. Site numbers are explained in Table 5.2.2



The survey revealed a remarkable paucity of tangible archaeological or heritage traces on the inselberg itself and within the basin. The terrain is, in general, highly eroded: it is extremely rocky, often with minimal or no topsoil, making it a hostile environment for preservation of archaeological traces, and indeed for human occupation in the first instance. The outer rim of the Gamsberg and the broader eastern plateau was found on the whole to have extremely minimal archaeological traces, with occurrences being mostly in the form of occasional isolated flakes (exemplified by the locality GI 6). Attention was focused on several parts of the broad eastern rim and within valleys and kloofs sloping eastwards off the Gamsberg and westwards into the basin. The kloof areas, settings of high energy run off during heavier rains, were found to be largely devoid of artefacts. Small shelters/overhangs at various places in the sides of the basin and kloofs were examined for evidence of possible Later Stone Age occupation within the Gamsberg basin, eg stone tool scatters in driplines or on a shelter talus, or where finger paintings or engravings might feature on rocks or shelter walls. Again, evidence was generally lacking.

Finds of varying significance were made, however, at five locales on the western side of the inselberg, i.e. on its north western rim and within the Gamsberg basin. These are indicated in Figure 5.2.3 are described and evaluated in archaeological terms in Table 5.2.3.

Table 5.2.3. Archaeological Observations: Gamsberg Inselberg and Basin

Locality	Description	Heritage Significance
GI 1 29.23450 S 18.95805 E	A Middle Stone Age workshop site identified previously by Deacon (1995), of high regional significance. It had been quarried for the making of a landing strip on the top of Gamsberg. The <i>in situ</i> remainder of the occurrence is estimated to extend over an area of >150 x 50m, and was revealed in a scraped section to have a depth of at least 100 mm in at least that part of the site. The significance of the site is partly in relation to the raw material source at that point in the landscape.	High
GI 2 29.23668 S 18.95275 E	A <i>small</i> shelter on the northern side of the basin. While it was expected that there might be evidence of Later Stone Age (LSA) or earlier use, there were minimal traces of archaeological material: a single LSA quartz flake was found. The shelter was disturbed by previous mining-related activity.	Low
GI 3 In vicinity of 29.24339 S 18.95494 E	Scatters of varying but generally low density Middle Stone Age and Acheulean material, sometimes mixed, in and alongside the dry watercourse draining the western interior of the inselberg. Erosion and high energy run-off in heavy rains would account for what would essentially be a secondary depositional context, lacking in archaeological integrity.	Low
GI 4 In vicinity of 29.24162 S 18.95041 E	On the inner slopes of the Gamsberg basin several places with isolated or weakly clustered artefacts of Pleistocene age were noted. One of these in the approximate location indicated suggests an Acheulean (Earlier Stone Age) workshop site focussed on what was apparently a favoured raw material source outcropping there.	Low
GI 5 In vicinity of 29.24649 S 18.95346 E	South east of Site GI 4, a further low density clustering of Acheulean artefacts. In an eroded setting on the sloping side of the basin, there is no depth of deposit and hence no likelihood of stratigraphy.	Low
GI 6 29.25676 S 18.99313 E	On a flat and slightly less rocky area, an extremely low density of probably Middle Stone Age artefacts (up to 20 m apart from one another).	Low

Locality	Description	Heritage Significance
GI 7 29.230614 S 18.98044 E	A rock shelter near the northern exit of the kloof with some deposit but no clear evidence of archaeological material. Discolouration on the shelter wall may constitute a faded finger painting but this seemed equivocal. The shelter is beyond the planned mine layout.	Medium

5.2.4 *Extension of existing Wastewater Treatment Works and housing development in Aggeneys*

Figure 5.2.4 *Location of wastewater treatment works expansion and housing development at Aggeneys*



Survey of the flat plains at the south western side of Aggeneys where the housing development is due to be situated, and alongside (south of) the existing Wastewater Treatment Works, as shown in the above Figure, yielded no archaeological or cultural heritage resources. It is also considered unlikely that any significant artefact occurrences would be found below the surface in either instance. No mitigation is required.

6.1 *IMPACT ON ARCHAEOLOGICAL RESOURCES*6.1.1 *Impact Description and Assessment*Table 2.1 *Impact Characteristics: Archaeological Resources*

Summary	Construction	Operation	Decommissioning/ Post Closure
Project Aspect/ activity	Loss of archaeological resources through landscape/site disturbance.	Loss of archaeological resources through landscape/site disturbance. Management of archaeological resources relative to operation of the mine and associated infrastructure.	No archaeological impacts are anticipated during decommissioning phase.
Impact Type	Direct	Direct	
Stakeholders/ Receptors Affected	Archaeological resources	Archaeological resources	

Construction and Operational Phase Impacts

Construction phase activities will include land clearance and excavation of different parts of the site in preparation of infrastructural development. The primary construction activities will include the following:

- Pre-stripping of the open pit;
- Excavation of the waste rock dump and tailings dam area;
- Construction of a contractor's camp and concentrator plant (including some of associated infrastructure); and
- Construction of bulk service requirements (i.e. water, sewage and power infrastructure).

The following activities will be characteristic of the operational phase of the Project:

- Further expansion of open pit;
- Increase in the waste rock dump and tailings dam footprint;
- Construction of full internal road network; and
- Expansion of the concentrator plant and associated infrastructure.

Archaeological artefacts are considered, in each instance, a unique and non-renewable resource. The Project will result in losses to archaeological artefacts during both the construction and operational phases. The construction and operational phase impacts can be seen as permanent and irreversible, and would likely be experienced at both phases of the Project. It is likely that the construction and operation of infrastructure would contribute to the loss of archaeological artefacts. In light of this, the construction and operational phase impacts associated with the Project are assessed in an integrated manner, as they are closely linked. Note however that mitigation measures are specific to the different phases and are presented accordingly.

Based on the findings of the site visit undertaken, areas of archaeological importance have been ranked according to the northern slope, southern slope and the inselberg basin (a detailed description of artefacts identified in these three regions are contained in above). Based on artefacts of importance identified, the proposed layout of the Project will likely impact the following areas of archaeological importance:

Northern Slope

Artefact occurrence NG1 (mid-twentieth century drilling site) is likely to be impacted during the construction and subsequent expansion of the tailings dam, located on the northern border of the N14. However, this site has been allocated a low archaeological significance.

Artefact occurrence NG 2 is located along the northern border of the N14, in close proximity to the road. This artefact has been allocated a high archaeological significance, consisting of a series of dome-shaped bedrock outcrops around which are clustered an abundance of Ceramic Later Stone Age artefacts (stone artefacts, pottery, ostrich eggshell). Due to its location well clear of the proposed tailings dam (and other infrastructure), the site is unlikely to be impacted during the construction and operational phase.

Artefact occurrence NG3 will likely be impacted by the construction of powerlines and potentially activities related to the construction and operation of the contractor camp. This artefact has been allocated a low archaeological significance, as this is an individual instance of an isolated Earlier Stone Age cleaver that lacks context and hence is of limited archaeological importance.

Southern Slope

The southern slopes of the inselberg contain a greater variety and richness of archaeological artefacts. A total of 8 artefact occurrences considered to be a high archaeological importance were identified.

Artefact occurrence SG 1, which is suspected as being a grave site, is located to the south west of the inselberg. Furthermore, artefact occurrence SG2, which is a surface scatter of Ceramic Later Stone Age material, is also located to the south west of the inselberg. Both artefacts occurrences have been allocated a high importance. Based on the power infrastructure proposed, these two sites (SG 1 and SG 2) may likely be impacted during the construction phases.

The site SG 7, which has been identified as the kloof in which possibly the last San of the area were murdered, was identified to be a high heritage importance. Although upon inspection no particular evidence was found at the site itself of this historical event, written and oral history lends support to this speculation, and on this basis the site must be considered important. The existing access road to the inselberg will be widened by 15 m and utilised for the construction phase only. A new access road will be constructed along the northern slopes of the inselberg, at an operational level. The processes of widening the existing access road along the southern slopes of the inselberg will unlikely impact the site SG7.

It is unlikely that the remaining artefact occurrences identified on the southern slope will be impacted by project activities.

Basin of Inselberg

A total of seven artefact occurrences of archaeological value were identified within the basin (including the rim) of the inselberg. Of the seven artefacts identified, only three sites are expected to be impacted during the construction and operational phases.

Artefact occurrence GI 2, which contains indications of is ephemeral Later Stone Age occupation, was considered to be of low archaeological importance, partly on account of previous disturbance. Artefact occurrence GI3, which is a Middle Stone Age artefact site, has also been allocated an importance rating of low. Both sites have been subject to disturbances from previous mining activities and erosion from high energy surface run-off (i.e. heavy rains over millennia). Both these sites are likely to be impacted during the construction and operation of the primary crusher and conveyor system.

Furthermore, artefact site GI3 will likely be impacted by the operational phase of the open pit.

The most significant artefact occurrence identified was found along the rim of the inselberg (artefact GI1). This site is characterised as a Middle Stone Age workshop and is considered of regional importance. The site was originally quarried for material to construct a new landing strip. However, despite the past impacts, the site is still considered to be of a high heritage importance. Based on its location, it is likely that the operational phase (and to a lesser extent construction) of the waste rock dump will have a direct impact on this site.

Box 2.1 *Summary of Construction and Operational Impact: Archaeological Resources*

Nature: Construction and operational activities would result in a **direct** impact on archaeological resources.

Sensitivity/Vulnerability/Importance of Resource/Receptor – High

Irreplaceability: The activity **will** result in the loss of **irreplaceable** resources

Impact Magnitude – High

- **Extent:** The extent of the impact is **local**
- **Duration:** The expected impact will be **permanent(i.e. irreversible)**
- **Scale:** The impact will result in **severely altered changes** to the resource/ receptor
- **Frequency:** The frequency of the impact will be **once off**
- **Likelihood:** Archaeological resources would **likely** be lost

IMPACT SIGNIFICANCE (PRE-MITIGATION) – MAJOR (-)

Degree of Confidence: The degree of confidence is **low**.

Construction and Operational Phase Mitigation

- Minimise the development footprint to only what is actually needed.
- Restrict all construction activities to designated working areas with all work areas and access areas clearly marked and signposted.
- Immediately report any heritage trace that may come to light during the construction phase.

- In the case of sites NG1 and NG3 it is suggested that a sufficient record exists and/or the sites are of low significance so that no further mitigation is recommended.
- In the case of sites SG 1 and SG 2 it is noted that the sites lie close to proposed power infrastructure, but pending more specific detail on the nature and precise location of the power infrastructure, it appears that mitigation here may not be required.
- In the case of sites GI 1 to 5, it was previously recommended that mitigation by way of salvage be carried out. (SAHRA issued permits in Nov 2000 for this work but these have since lapsed). However, in terms of revised layout, only GI 1, 2 and 3 would be impacted and hence only these three sites would now require Phase 2 archaeological mitigation (salvage).
- Physical salvage of sites would need to take place before commencement of the construction and operational phases. Detailed recommendations and proposals for mitigation need to be made.
- Further investigation of the possible massacre site SG7 and possibly associated archaeological sites SG3 and SG4 (not expected to be impacted) on the south side of Gamsberg is recommended in order to ensure adequate protection of this sensitive zone within the Study Area. If further investigations reveal SG7 to be important, then the suggestion of its declaration as a provincial heritage site may be explored.
- Restrict operational activities to designated working areas with all work areas and access areas clearly marked and signposted.
- Immediately report any heritage trace that may come to light during the operation phase.
- Consider creation of a resource centre/museum for Gamsberg as a means of enhancing tourism in the area while also addressing community needs in terms of local heritage (both for general awareness as well as formal educational uses).

6.1.2

Residual Impact

The implementation of the above mitigation measures would reduce the decommissioning phase impacts from **Major** to **Moderate** significance. The pre- and post-mitigation impacts are compared in *Table 2.1* below.

Table 2.5.1 Pre- and Post- Mitigation Significance: Impact on Archaeology

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction and Operational	MAJOR (-ve)	MODERATE (-ve)

Consideration was given to potential impacts experienced during the decommissioning phase. However, at decommissioning, activities will include the removal of existing infrastructure and will be limited to the existing disturbed footprint. In doing so, no decommissioning impact is anticipated on archaeological sites.

6.2 IMPACT ON CULTURAL HERITAGE

6.2.1 Impact Description and Assessment

Table 2.1 Impact Characteristics: Cultural Heritage

Summary	Construction	Operation	Decommissioning/ Post Closure
Project Aspect/ activity	Loss of cultural heritage resources through landscape/site disturbance.	Loss of cultural heritage resources through landscape/site disturbance.	The removal of operational infrastructure relative to cultural heritage resources.
Impact Type	Direct	Direct	Direct
Stakeholders/ Receptors Affected	Cultural Heritage resources	Cultural Heritage resources	Cultural Heritage resources

Construction and Operational Phase Impacts

Similarly to the impact on archaeology, the construction and operational phase impacts to cultural heritage will overlap between the two phases. Since these impacts are closely linked, the construction and operational phase impacts will be jointly assessed.

During the site inspection, tangible artefacts of cultural heritage value were not identified within the mining license area. However, as described above, the southern section of the inselberg may pertain to the people who were subject to local genocide in the later nineteenth century (the south western

and south eastern corner of the inselberg might relate to a historically attested massacre). This makes a rather sensitive landscape that may in future become increasingly a focus of genocide consciousness. Should the massacre site be confirmed within the mining license area (implicating, primarily, site SG 7 and perhaps also SG 4), cultural heritage importance of the site will certainly increase, especially for those that share a descent from the people that were subject to local genocide. Furthermore, a potential gravesite, site SG1, also contributes to the cultural importance of the area. However, as the physical infrastructure associated with the Project does not appear to be directly located at these sensitive locations, the expected impacts are likely to be limited. Any future refinements to the project design and layout must also avoid these sensitive areas of heritage value.

The sense of place for the area derives from the combination of all landscape types and their impact on the senses. Most people who live near or pass through the Study Area approach it along the N14 national road. They travel through an open dry landscape that is frequently 'punctuated' by curious inselbergs. It is this vast, desolate landscape coloured directly by its geological substrate against a wide open blue sky that gives the area its distinctive character. Although the study area evokes a distinct sense of place, it is not unique to the district or region. Nevertheless, the sense of place (including landscape quality) of the Study Area is considered to be high. The Project will disturb the surrounding landscape through the construction of physical infrastructure (i.e. waste rock dump and tailings dam) and increased traffic volumes of heavy duty vehicles. Furthermore, increased ambient dust and noise levels associated with the Project may also contribute to further changes to the overall sense of place.

Box 2.2 *Summary of Construction and Operational Impact: Cultural Heritage Resources*

Nature: Construction and Operational activities would result in a **direct** impact on cultural heritage.

Sensitivity/Vulnerability/Importance of Resource/Receptor - Medium

Irreplaceability: The activity **will** result in the loss of **irreplaceable** resources

Impact Magnitude - Medium

- **Extent:** The extent of the impact is **local**
- **Duration:** The expected impact will be **permanent (i.e. irreversible)**
- **Scale:** The impact will result in **notable changes** to the resource/ receptor
- **Frequency:** The frequency of the impact will be **once off**
- **Likelihood:** Sense of place and cultural heritage resources would **likely** be lost

IMPACT SIGNIFICANCE (PRE-MITIGATION) - MODERATE (-)

Degree of Confidence: The degree of confidence is **Low**.

Construction and Operational Phase Mitigation

- Minimise the development footprint to only what is actually needed.
- Restrict all construction activities to designated working areas with all work areas and access areas clearly marked and signposted.
- Immediately report any cultural heritage trace that may come to light during the construction phase.
- Physical salvage of sites would need to take place before commencement of the construction and operational phases.
- Sites SG1, SG4 and SG7 should be identified as “no-go” areas, during the construction, operational and decommissioning phases. A suitably qualified archaeologist should assist with defining areas of sensitivity, prior to construction.
- Further investigation of the possible massacre site SG7 and possibly associated archaeological sites SG3 and SG4 (not expected to be impacted) on the south side of Gamsberg is recommended in order to ensure adequate protection of this sensitive zone within the Study Area. If further investigations reveal SG7 to be important, then the suggestion of its declaration as a provincial heritage site may be explored.

- Restrict operational activities to designated working areas with all work areas and access areas clearly marked and signposted.
- Immediately report any cultural heritage trace that may come to light during the construction and operation phase.

Decommissioning Phase Impacts

During decommissioning, mining production will begin to decline and finally come to a halt. This would have the indirect result of reduced traffic volumes of heavy duty vehicles as well as reduced dust and noise generation. This is likely to reduce the expected impacts to the sense of place. However, the key project infrastructure such as the tailings dam and waste rock dump will remain a permanent feature within the landscape. These large features would persist with impacts on the surrounding landscape, post mining. Despite the changes to traffic volumes and dust generation, the permanent nature of the mineralised waste facilities (i.e. waste rock dump and tailings dam) will continue to impact the sense of place permanently.

Box 2.3

Summary of Decommissioning Impact: Cultural Heritage Resources

Nature: Decommissioning activities would result in a **direct** impact on cultural heritage resources.

Sensitivity/Vulnerability/Importance of Resource/Receptor - Medium

Irreplaceability: The activity **will** result in the loss of **irreplaceable** resources

Impact Magnitude - Medium

- **Extent:** The extent of the impact is **local**
- **Duration:** The expected impact will be **permanent(i.e. irreversible)**
- **Scale:** The impact will result in **notable changes** to the resource/ receptor
- **Frequency:** The frequency of the impact will be **once off**
- **Likelihood:** The sense of place would **likely** be impacted.

IMPACT SIGNIFICANCE (PRE-MITIGATION) - MODERATE (-)

Degree of Confidence: The degree of confidence is **high**.

Decommissioning Phase Mitigation

- Limit all decommissioning activities to the existing disturbed areas.

- Remove as much as possible of the mine infrastructure from the site, during decommissioning.
- Rehabilitate all disturbed areas and attempt to reinstate the impacted areas as closely as possible to their original state.
- If, as recommended, a museum or resource centre is created for enhancing tourism and awareness of local heritage, then seek to ensure its sustainability as a resource during and beyond decommissioning.

Residual Impact

The implementation of the above mitigation measures would reduce the construction, operational and decommissioning phase impacts from **Moderate** to **Minor** significance. The pre- and post-mitigation impacts are compared below.

Table 6.5.2 *Pre- and Post- Mitigation Significance: Impact on Cultural Heritage*

Phase	Significance (Pre-mitigation)	Residual Significance (Post-mitigation)
Construction and Operation	MODERATE (-ve)	MINOR (-ve)
Decommissioning	MODERATE (-ve)	MINOR (-ve)

6.3 *SUGGESTED CHANGE OF LAY-OUT: SUMMARY OF PROFESSIONAL OPINION ON THE MANNER IN WHICH SUGGESTED CHANGES INFLUENCE FINDINGS AND RECOMMENDATIONS*

Changes to the project layout have been suggested by the Applicant and design engineers subsequent to completion of the above assessment. The changes are as follows:

1. Relocation of the explosives magazine area from the top of the inselberg to an area located between the N14 and inselberg. Due to the impacts to three watercourses on the inselberg, this relocation was requested by the Specialist Team.
2. Increase in size of the waste rock dump from 270 hectares to 490 hectares. In order to reduce the slope angle of the waste rock dump (i.e. from 45° - 35° degree slope), the footprint of the waste rock dump has increased. This design refinement was in response to DMR requirements for a waste rock dump.

Examination of these suggested changes against data on heritage resources reported here indicates that the changes would not influence the impact rating and associated mitigation measures already indicated in this report.

In some parts of the Study Area sites that have been identified in the baseline study would be negatively impacted by proposed construction and operations. Principally this applies to the sites NG1, NG 3 and GI 1 to 5, all of them likely to be destroyed by the proposed mining or associated construction. In others the identified sites would be outside of areas of direct mining or associated infrastructure impact.

7.1 RECOMMENDED MITIGATION: SALVAGE OF SITES

In the case of sites NG1 and NG3 it is suggested that a sufficient record exists and/or the sites are of low significance so that no further mitigation is recommended.

In the case of sites GI 1 to 5, it was previously recommended that mitigation by way of salvage be carried out. (SAHRA issued permits in Nov 2000 for this work but these have since lapsed).

Physical salvage of sites would need to take place before commencement of the construction and operational phases. Detailed recommendations and proposals for mitigation need to be made.

Further investigation of the possible massacre site SG7 and associated archaeological sites on the south side of Gamsberg is recommended in order to ensure adequate protection of this sensitive zone within the Study Area. It is possible that a call might be made for the preservation of such a site and its conservation as a Provincial Heritage Site.

7.1.1 Possible sub-surface features

It is important to note that in areas where impacts are estimated to be low after the recommended mitigation, subsurface archaeological materials may still come to light during construction and/or operational phases. Such materials could include, inter alia, human burials (not all precolonial graves were marked with cairns and thus there may not be surface indications of their existence); subsurface strata containing significance concentrations of stone artefacts not visible at the surface; or a cache of ostrich eggshell water flasks. In the event of any significant feature such as the above being

uncovered it should be reported immediately to SAHRA/the PHRA and an archaeologist for evaluation and mitigation if necessary.

7.2

RECOMMENDED CURATION AND DISPLAY

It was recommended previously that one of the mitigation measures would be the creation of a museum or resource centre for Gamsberg. This recommendation is here endorsed, as a means of enhancing tourism in the area while also addressing community needs in terms of local heritage (both for general awareness as well as formal educational uses). Such a centre could also have a role in relation to the emerging status of the Gamsberg area in relation to the nineteenth century demise of the 'Bushmen' of this region.

Materials salvaged would be analysed, marked and stored at the McGregor Museum in Kimberley (as the accredited repository for archaeological materials of the Northern Cape), with all resultant records, illustrations and reports being archived as part of the collection in accordance with SAHRA guidelines and museum policy, inter alia for long-term researcher access. A selection of typical examples of artefacts could be made available for exhibition in any eventual museum/resource centre at Gamsberg, together with relevant reports/publications, posters, and so on, with materials also being generated for use in local schools.

8.1 PLACE NAMES

Place names give insight into the history of the Study Area and the surrounding landscape.

Of particular relevance are the names of the places Gams, Aroam and Aggeneys – names that were attached to farms once they were parcelled out as private property in the first two decades of the twentieth century. These names are derived from Nama names and thus echo an aspect of precolonial spatiality and sensibility here – what Ingold (2000) refers to as a ‘dwelling perspective’. Some of the local debates around the meanings of these names have thrown up details of rather horrific aspects of local history which must be given some emphasis with regard to an intangible heritage significance for the Gamsberg area.

8.1.1 *Gamsberg*

In 1824 when Thompson travelled through this area he noted the name of the place as being *t’Kams*, meaning “tufted grass” in the Nama dialect. Nienaber and Raper cite a local farmer, A.J. van Jaarsveld, who similarly asserted that the origin of *Gams* or *Gaams* was in the word *Tha-aams* which was pronounced with a click, where *Tha* means “grass” and *aams* means “mouth”. The Nama |*Gâ-ams* literally means “Grasmond” or “Grasfontein”. The grass in question is most likely to be *Aristida brevifolia* (Nienaber & Raper 1977, 1980).

8.1.2 *Aroam*

This name is derived from the Nama *ƛaro-* meaning “wag-’n-bietjie” tree (*Ziziphus mucronatus*) and *am* or *am-s* meaning “mouth”. The name could thus be translated as “Wag-’n-bietjiebosfontein”.

8.1.3 *Aggeneys*

A variety of interpretations exist for Aggeneys/ Aggeneis. The name appeared first in written form as *Achenijs* in 1859. In a “Brief history of Aggeneys” published in *The Cape Argus* in July 1973 (Nienaber & Raper 1977:173) the following story is given:

“Aggeneys is the name of a kloof on Vickie Burger’s farm ... Long before the turn of the century, the Bushmen had several strongholds in the mountains between Pofadder and Springbok and from these they carried out raids on the farmers. Finally the farmers could no longer tolerate the marauding Bushmen and formed a commando which followed the spoor of the Bushmen and the livestock that they had stolen to the kloof, which is today known as Aggeneys. Near the kloof they split into three parties which surrounded and trapped the Bushmen at a spring near the confluence of three ravines. The Bushmen were wiped out and the kloof became known as ‘The Place of Blood’. The Nama Coloureds have always known the kloof as ‘The Place of Water’, as there were several natural springs there, but to this day no-one is quite certain of the origin of the name Aggeneys...” (Nienaber & Raper 1977:173).

Other interpretations are cited by Nienaber and Raper, including the possibility that it means ‘Place of Red Clay’ or that it is associated with reeds (*riete*) (reviewed in Morris 2000a:10).

An important further source not accessed previously comes in the form of C.R. Burger’s (1986) thesis, *’N Ondersoek na die Oorsprong en Betekenis van Plek-en Plaasname in die Landdrosdistrik Namakwaland*, which cites A.J. Burger, a retired farmer, in commentary given in a letter written in 1982 which contradicts the above and links the incident of the killing of Bushmen rather with Gamsberg than with Aggeneys.

“Daar was beslis riete, ook nounog, en daar was ook een of meer fonteine toe my oorlede vader die plaas in 1910 gekoop het. Daar was en is ook nog rooi klei. Ek kan onthou hoe die meide hulle gesigte besmeer het – eintlik ’n rooi sagte klip. Die laaste vesting waar die Boesmans doodgeskiet is deur die Boere, was nie Aggeneys nie, maar baie beslis aan die suiderkant van Gamsberg – so ’n lelike kloof in die berg. Jy kan dit sien as jy met die ou gryspad ry.” (Burger 1986 :147-148). (Emphasis added).

[“There were certainly reeds, even now, and there were also one or more springs when my late father purchased the farm in 1910. There was also and still is red clay. I can remember the Coloured women [*meide*] smearing their faces with it – actually a red soft stone. *The last place where the Bushmen were shot dead by the farmers was not at Aggeneys, but very definitely on the southern side of Gamsberg – a dreadful kloof in the mountain. You can see it if you drive along the old gravel road”*] (Emphasis added).

C.R. Burger thus rejects the meaning ‘Place of Blood’ for Aggeneys, on the one hand, and is inclined to opt for ‘Place of Reeds’ – from the Nama *ḫa*

meaning riet and *!keis* meaning place. On the other hand he is quite emphatic and specific about Gamsberg being a site where Bushmen were killed.

Discussion on place names and local histories

One point of significance is that these names appear to derive from Nama usages which began to be fixed in colonial naming conventions by at least 1824. That farms were being sold off as private property here as recently as the second decade of the twentieth century meant that on average indigenous names were surviving longer and entering official geographical nomenclature on a larger scale than elsewhere in the region.

Those amongst whom these names were originally current may well have been responsible for some of the most recent Stone Age material that includes pottery types associated with the Khoekhoe.

Another hint of some continuity from a precolonial past is the evidence that certain traditional customs were still practised locally as can be deduced from the description of the use of 'red clay' or ochre.

However, there are indications of quite radical breaks in continuity, with a significant element of violence punctuating the recent history of the region, as indicated by the stories related above. Further corroborating the local legend, E.J. Dunn mentioned the incident in an 1872 account of a journey through the area. At 'Ghaums' (ie Gams), he mentions a spring: "at this water an affray took place between the Boers and Bushmen. The Bushmen scherms, made of stones, still remain, as well as the marks of the bullets on the rocks" (Dunn in Robinson 1978:62). In the previous Gamsberg study (Morris 2000a:11) it was remarked that this may have been a spring on the eastern side of Gamsberg, but the comments in C.R. Burger's study make it most likely that this was on the *south* side of the inselberg. Several massacres are recorded as having taken place in the region from the mid 1850s, as reported by Louis Anthing to the Colonial Secretary, Cape Town, in 1863, where he exposes deliberate acts of extermination (it has been referred to as genocide) by Boers and Bastards. Anthing specifically alludes to major incidents of this nature in the vicinities of Bosluis and Namies (immediately east of Gamsberg) where "hundreds must have been killed" - while "smaller affairs [were] equally horrible" (Anthing 1863:10).

More than a quarter of a century prior to this, Thompson noted that the local people, called the *Obseses*, were an amalgamated grouping of various 'tribes'

which had been “assailed by ... formidable enemies.” The latter enemies had included the raiding bands of Afrikaner and probably other frontier bandits and commandos (1827:288, 290-1). The indigenous people of the region had faced sustained onslaughts from at least the 1770s (Penn 2005) and by the later nineteenth century the independent San had essentially been wiped off the face of the country.

Important insights into the pre- and protocolonial adaptation of seasonal/opportunistic aggregation and dispersal by herders in this harsh environment are given by George Thompson who camped at *t’Kams* (Gams) on 24 August 1824 – where in fact the missionary Bartlett of Pella was then temporarily stationed. He remarked that “severe droughts, and consequent failure of pasturage, forced them [Nama herders of Pella] occasionally to disperse themselves in divisions over the country wherever a spring of water exists with grass in the vicinity for their flocks ... the nature of the country is such, that a people like the Namaquas must be nomadic ... as soon as rain falls, the pastures of Pella will instantly spring up, and the scattered divisions of the people will again be reassembled” (Thompson 1827:284).

Thompson interestingly observed that they possessed a breed of sheep different from the fat-tailed variety that was usual further south (1827:289). While fat-tailed sheep lose their fat tails under drought conditions, there is a thin-tailed breed of indigenous sheep known from the eastern side of the subcontinent (E.A. Voigt pers. comm.). Thin-tailed sheep are depicted in rock paintings in the Limpopo basin.

8.2

LATE HOLOCENE, ROCK ART AND OLDER STONE AGE SITES

Three scoping reports for Eskom (Prinsloo 1998; Morris 1999a; 1999b) and one for Black Mountain Mine (Morris 2000b) describe Later Stone Age sites with and without pottery. A sparse surface scatter of possible Middle Stone Age lithics is noted from a farm near Pofadder. An impression gained from these studies was that archaeological visibility in the region is markedly lower than in areas in the Karoo and eastern Bushmanland, to the south east, and along the Orange River (Beaumont & Morris 1990; Morris & Beaumont 1991; Smith 1995). The sample of previous observations was small and limited in scope, but by initial appearances it had seemed that sites of late Holocene age were the most common. The largest site noted (Prinsloo 1998; Morris 1999a) was a presumed herder site with abundant stone artefacts, pottery and fragments of ostrich eggshell, focussed on a water hole known as Schuitklip (an early description of this water hole is to be found in E.J. Dunn’s (Robinson 1978) account of a journey there in 1872). These

observations are in accord with the findings of Beaumont *et al* (1995) and of Smith (1995) in their broader look at the archaeology of the Orange River and its hinterland. Both these latter studies refer further to earlier material from a small number of sites ascribable to the Middle and Earlier Stone Ages.

A report by Deacon (1995) describes rock paintings found on a boulder next to the Aggregate Quarry at Black Mountain Mine, Aggeneys (29°15'26" S; 18°48'12" E). These are simple finger paintings including two "Star" motifs and an indented oval shaped image. Paintings similar to these are to be found over a wide area in the western half of the interior of South Africa, not infrequently on isolated boulders in the Karoo (sometimes along with rock engravings), and in rock shelters. Their age and context is not well understood, but they appear to be associated in this region with KhoeSan (and possibly Khoekhoe specifically) of approximately the last millennium, rather than with other groups regarded as the makers of finger paintings elsewhere in the subcontinent.

In his book, *The Bushman*, Dunn recalled "near N'Ghaums [Gams], I saw an engraving of a hippopotamus being dragged across the dry veldt by several Bushman people by means of a rope attached to its nose" (1931 : 46). Dunn offers an explanation suggesting that the hippopotamus, associated with water, was shown in this way on the engraving in order that "rain would necessarily follow...and an abundance of food be assured". Current understandings of Later Stone Age rock art suggest that images of large mammals such as the hippopotamus may well have served as metaphors for "rain animals". Dunn's hippo engraving has not as yet been located.

Observations made at, and in connection, with Gamsberg are categorised here by age and discussed under the headings: Most recent traces; Colonial frontier traces; Later Stone Age traces; Middle Stone Age traces; and Earlier Stone Age traces.

9.1 *MOST RECENT TRACES*

The most recent material traces of human activity ('archaeological' in the broadest sense – but not per definition in the National Heritage Resources Act which stipulates >100 years old) are the traces of previous mining/prospecting activity in the twentieth century. They include a prospectors' or surveyors' camp-site half way up the inside of the western rim (with circular clearings, perhaps for bell-tents?), where corned beef tins (*Damara Meat*, Windhoek, with metric measures, would tally with a date of circa 1971 when geologists were identifying rocks of gossan type at Gamsberg). Remains of various structures in and around the inselberg are linked to late twentieth century mining-related activity, and include water drainage features, prospecting drilling sites, road-ways and a landing strip. None of these is considered of high heritage significance.

9.2 *COLONIAL FRONTIER TRACES*

From the colonial frontier era of the eighteenth and nineteenth centuries, written records include the travelogues of George Thompson (1827) and E.J. Dunn (1931, Robinson 1978) who visited the area in 1824 and 1872 respectively. Their observations (and see Penn 2005) shed some light on the local history of the nineteenth century. Place names were coming to be fixed in the colonial frontier period and these capture vestiges of indigenous sensibilities.

A much more prominent appreciation now exists concerning the history of genocide against the Bushmen in this area (Anthing 1863), with strong indications that a kloof on the south side of Gamsberg was one of the massacre sites, referred to by Dunn in 1872 (Robinson 1978), by Burger (1986) and, more obliquely, by Anthing (1863; Jose Manuel de Prada-Samper pers.

comm. 2009). A local farmer recently (2013) referred to a particular kloof as 'Inkruip' (Creep In), which corresponds with the above descriptions. It is identified as Site SG 7 in this report.

A call has already been made for massacre sites to be identified on the ground and declared as Provincial Heritage Sites (eg by the folklorist Jose de Prada-Samper in discussion with staff of the Northern Cape Struggle History Project and Ngwao Bošwa jwa Kapa Bokone – the Provincial Heritage Resources Authority). This clearly could have an impact on plans with respect to mining at Gamsberg, although the anticipated layout presently excludes the vicinity of Site SG7 and the sensitive southern side of the inselberg. (One comment received was that 'mining here would be like mining Auschwitz'). Such sites could ultimately form part of a /Xam and Khomani Heartland World Heritage Site, already on South Africa's Tentative List, although the main centre for the /Xam is likely to be further to the south east in the area between Kenhardt and Carnarvon.

Claims that archaeological traces relating to these incidents had been found within the Gamsberg basin (Dicey 2005:166-7) could not be substantiated (William Dicey pers.comm. – who uses an image from the rim of Gamsberg as the cover picture for his book, *Borderline*), but material which could well be relevant includes the Later Stone Age sites with ceramics and porcelain discussed in the next section.

Sites SG 5 and SG 8 (both beyond planned layout of the mine) include stone walling and kraals relating to the influx of colonial farmers to this landscape. SG 8 is in close proximity to a spring, a critical resource before the introduction of drilling for water in the twentieth century.

9.3 *LATER STONE AGE (LSA) TRACES*

The records of the early travellers are of value for interpreting the final Later Stone Age traces in the area. On the face of it, it was something of a surprise that so little evidence of a LSA presence was to be found at Gamsberg, not least because Late Holocene LSA sites were the predominant archaeological signature noted in albeit limited surveys elsewhere in the Aggeneys-Poafadder region.

The considerable "background noise" of massively preponderant small nodules of white quartz strewn over most the surfaces surveyed, could have hampered the identification of LSA sites, as local assemblages of the period

are dominated by stone artefacts made from such nodules. But known sites in the vicinity (documented at Aggeneys and Black Mountain) also invariably have lithics made from exotic fine-grained river pebbles (no artefacts on this raw material noted on the Gamsberg inselberg or in the basin). Moreover, fragments of ostrich eggshell from broken water flasks are usually present (none found on Gamsberg inselberg, but indeed present at sites around the south-western and southern base of the mountain and at other sites in the surrounding area). Most of the known LSA sites in the region also have pottery. The absence of these additional features in areas examined on the inselberg and in the basin suggests that if there was a LSA presence there it was so ephemeral as to leave minimal traces in the archaeological record.

The sites recorded outside the inselberg, especially those on the south side of Gamsberg show that late LSA inhabitants of the area indeed preferentially occupied other parts of the landscape, namely dune areas and alongside certain features including outcrops of bedrock or dry watercourses where water collects and might remain for a time in hollows after rains. Some of these sites have grinding grooves; and they all have stone artefacts, fine grit-tempered pottery and ostrich eggshell fragments. Another common feature of the sites is colonial era glass and porcelain, representing either interaction by LSA people with colonial farmers or the so-called Bastards, or use of the sites by these frontiersmen themselves later on, or both. It is known that white farmers until as late as the 1930s practised transhumance, utilising the seasonal water sources known as !Gorras.

Beaumont *et al.* (1995) have shown, with reference to the LSA, that “virtually all the Bushmanland sites so far located appear to be ephemeral occupations by small groups in the hinterland on both sides of the [Orange] river” (1995:263). This was in sharp contrast to the substantial herder encampments along the Orange River floodplain itself, which reflected the “much higher productivity and carrying capacity of these bottom lands.” “Given choice,” they add, “the optimal exploitation zone for foragers would have been the Orange River.” The advent of herders in the Orange River Basin, Beaumont *et al.* argue, led to competition over resources and ultimately to marginalisation of hunter-gatherers, some of whom then occupied Bushmanland, probably mainly in the last millennium, and focused their foraging activities on the limited number of water sources in the region. “Surveys of large areas away from [such water sources] have failed to yield any signs of human occupation, except around the granite inselberg extruding above the peneplain, ... the red dunes which produced clean sand for sleeping, or around the seasonal pans” (Beaumont *et al.* 1995:264). It is clear that, possibly following good rains, herders themselves moved into the hinterland (the Aggeneys, C1, site may reflect this archaeologically). A further process

attested by Thompson (1824) for herder groups settled at the stronger springs such as Pella, is that such groups will have dispersed during periods of drought. At such times competition between groups over resources, and stress within already marginalised hunter-gatherer society, must have intensified.

The 'Bushmen' ultimately exterminated at sites such as Gamsberg would have been probably the last stone tool makers and the last representatives of the Later Stone Age in this part of South Africa.

9.4 MIDDLE STONE AGE (MSA) TRACES

The rich MSA workshop site, Site GI 1, at the top of the northern rim of the Gamsberg inselberg, is thus far a regionally exceptional feature. What seems certain is that the site was focused on a form of raw material, gossan, apparently favoured locally in MSA times. The surrounding plains are strewn predominantly with gneiss and ubiquitous small surface nodules of quartz. In such an environment, something of a premium must have been placed in those rocks with good or suitable flaking qualities, and this no doubt accounts for the extensive use of this localised Gamsberg source. Artefacts from here were carried away at least as far as the Gamsberg basin and the eastern plateau, and regional surveys may well show a wider distribution.

The significance of the site can be gauged in part from the known distribution of MSA sites at a regional scale. Beaumont *et al.* have shown that "substantial MSA sites are uncommon in Bushmanland" (1995:241); and those that have been documented thus far have generally yielded only small samples (Morris & Beaumont 1991; Smith 1995).

It has been suggested that "the relatively few [sites] that have been discovered [in Bushmanland] appear to be largely confined to the MSA3 or late MSA1 phases of that technocomplex" (Beaumont *et al.* 1995:241). Volman's (1984) scheme places the MSA1 in Marine Isotope Stage 6 (cold with warm oscillations, ending at 128 ka BP), the MSA3 in Stage 5a-3 (late Last Interglacial through Last Glacial, cold with warm oscillations, c. 82-32 ka BP).

Examination of the unusually high density of artefacts at Site GI 1 could shed new light on the later Pleistocene occupation of the western interior of

South Africa. Whether or not it would be possible to resolve the palaeoenvironmental context of this Gamsberg occupation is uncertain. Two scenarios are possible: that glacial conditions resulted in a higher incidence of winter rainfall, further inland than at present, to support increased intensity of human occupation (MSA1 or MSA3) or that warmer than present Last Interglacial conditions resulted in a marked westward shift of summer rainfall, to support a generally higher biomass and intensity of human occupation (MSA2).

A preliminary look at a small sample of the material from Site GI 1 shows the presence of flake blades, un-retouched points and minimal retouch as a whole. There is some indication of butt reduction, regarded as evidence for hafting. These features point, very tentatively, to either MSA1 or, perhaps more strongly, MSA2 ascription, as characterised by Volman (1984). But what Volman earlier called “Early MSA” (MSA1, MSA2) and “Late MSA” (MSA3) are not readily distinguishable on the basis of their artefacts alone (Volman 1981). In terms of likely mining impacts, the significance of the site is high (see section 6 & tables 1-3, below, on issues of significance) and mitigation measures previously recommended are considered appropriate (Morris 2000a) .

9.5 EARLIER STONE AGE (ESA) TRACES

Gamsberg Sites GI 4 and 5 are ESA Acheulean workshop locales that are centred on outcropping raw material on the western side of the Gamsberg basin. These are amongst the very few known Acheulean sites in Bushmanland, and for this reason alone they are of regional significance.

Beaumont *et al.* (1995:240-1) note a widespread low density stone artefact scatter of Pleistocene age across areas of Bushmanland to the south east, where raw materials mainly quartzite cobbles, were derived from the Dwyka till. Systematic collections of this material made at Olyvenkolk, south west of Kenhardt and Maans Pannen, east of Gamoep, could be separated out by abrasion state into a fresh component of MSA with prepared cores, blades and points, and a large aggregate of moderately to heavily weathered ESA. The latter included Victoria West cores on dolerite, long blades, and a very low incidence of handaxes and cleavers. The Middle (and perhaps in some instances Lower) Pleistocene occupation of the region that these artefacts reflect must have occurred at times when the environment was more hospitable than today. This is suggested by the known greater reliance of people in Acheulean times on quite restricted ecological ranges, with

proximity to water being a recurrent factor in the distribution of sites. This must have been the case at Gamsberg, where clearly another draw-card, and undoubtedly the *raison d'être* for Sites GI 4 and 5, was the availability of suitable raw material for stone tool manufacture.

The artefacts found at these two Gamsberg sites include handaxes and Victoria West cores. The distribution of the rather specialised Victoria West technique of tool production in the Acheulean is known to be relatively restricted to the Karoo, western Free State, Transvaal and part of the Northern Cape Province – in short, a certain geographical spread within the interior of the subcontinent (Sampson 1974, Volman 1984). The method is not in evidence in the southern Cape; nor is it found north of the Limpopo. However, writing in the early 1970s, Sampson noted that “nothing is yet known of the (Acheulean) typology of the western and eastern regions of the subcontinent” (Sampson 1974:121), the western-most known occurrence of Victoria West then being the vast site of Nakop near the Namibian border (Brain & Mason 1955;Sampson 1974). The evidence from Gamsberg has the potential to shed important light on this question, and for now at least extends the known distribution of the Victoria West technique yet further westwards.

Current efforts with cosmogenic nuclide burial dating of a sequence of the Acheulean which includes Victoria West cores at Canteen Kopje at Barkly West may help position these industries in time (Gibbon, Leader & Kuman 2009). ESA and MSA material was noted in a low density scatter alongside the water courses at the bottom of the Gamsberg basin (Site cluster GI 3). These represent a mixed secondary deposit of limited archaeological significance.

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